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Science Laboratory Safety Test

Publication No. 4238

Introduction

Students and teachers working in science laboratories have certain important responsibilities that do not apply in other parts of the school building. Chemicals and apparatus will be used that, if handled carelessly, offer the potential to cause injury or even death to students. Science teachers have a duty of care to properly supervise, instruct, maintain equipment and facilities, and warn students of potential harm in their classrooms. This duty starts the very first day of class.

Science teachers should teach safety all year and review safety procedures often. Flinn Scientific recommends that a safety contract be reviewed with students before any laboratory activity is performed. Flinn also recommends that a safety contract be signed by the student and a parent. To ensure that students understand the safety rules, a safety exam should be given with only a passing grade of 100% accepted. If a student gets an answer wrong, that question should be reviewed with the student and the test retaken. This sets the standard that every safety rule is important 100% of the time. All signed safety contracts and safety exams should be kept by the teacher as “proof” that safety rules were explained and understood by all students. In the case of an accident, this evidence may be an important part of your defense that safety was taught in your classroom.

The questions on the Science Laboratory Safety Test are keyed back to the safety rules on the Flinn Scientific Safety Contract for easy review.

Safety Exam Question	Safety Contract Guideline	Safety Exam Question	Safety Contract Guideline
1	36	19	28
2	12, 26, 27	20	15
3	21	21	10
4	22	22	54
5	2	23	30
6	13	24	32
7	2, 5	25	8
8	50	26	33
9	47, 51	27	4
10	26	28	37
11	6, 7, 14, 44	29	44
12	41	30	2, 7
13	21	31	6
14	24	32	18
15	24	33	26
16	24	34	41
17	7	35	50
18	12		

The Flinn Scientific Safety Contract is enclosed for easy review. Please feel free to make copies of the safety contract for your students.

SAFETY-FAX™ . . . makes science teaching safer.

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Try These Other Safety Aids From Flinn Scientific

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Reduce your liability with Flinn Scientific's Liability Reduction Kit. These inexpensive "tools" are very helpful in proving you are a responsible science teacher. Kit includes 50 student safety contracts, 50 laboratory safety tests, 100 safety violation citations, 100 lab safety licenses, and 50 accident report forms. Each part of this kit can be purchased separately, if additional copies are needed.



Catalog No.	Description	Price/Each
AP8730	Liability Reduction Kit	*

*Consult Your Current *Flinn Scientific Catalog/Reference Manual*.

License, Lab Safety

By: S. Peretz and K. Kreidler
Thornridge H.S.
Dolton, IL

Working in a chemistry lab is a privilege which requires students to know and abide by the rules and to behave in a responsible manner. The Lab License® is awarded to students after they have passed a safety exam early in the semester. When a student breaks a safety rule, he or she gets a punch on the Lab License. If a student receives three safety citations within a grading period, that student's license is suspended and he or she must retake the safety exam. Lab Licenses are an innovative and effective way to ensure safety rules are followed in your laboratory. 4¼" x 3½".



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The combined program features are exactly as the individual stand-alone programs. For more details, see the *Flinn Scientific Catalog/Reference Manual*.

Catalog No.	Description	Price
SE2551	Combined MSDS/Chemventory Program	Consult Your Current <i>Flinn Catalog/ Reference Manual</i>

SCIENCE LABORATORY SAFETY TEST

1. Flammable materials, like alcohol, should never be dispensed or used near
 - A. an open door.
 - ☒ B. an open flame.
 - C. another student.
 - D. a sink.
2. If a laboratory fire erupts, immediately
 - ☒ A. notify your instructor.
 - B. run for the fire extinguisher.
 - C. throw water on the fire.
 - D. open the windows.
3. Approved eye protection devices (such as goggles) are worn in the laboratory
 - A. to avoid eye strain.
 - B. to improve your vision.
 - C. only if you don't have corrective glasses.
 - ☒ D. any time chemicals, heat or glassware are used.
4. If you wear contact lenses in the school laboratory,
 - A. take them out before starting the lab.
 - B. you do not have to wear protective goggles.
 - ☒ C. advise your science instructor that you wear contact lenses.
 - D. keep the information to yourself.
5. If you do not understand a direction or part of a lab procedure, you should
 - A. figure it out as you do the lab.
 - B. try several methods until something works.
 - ☒ C. ask the instructor before proceeding.
 - D. skip it and go on to the next part.
6. After completing an experiment, all chemical wastes should be
 - A. left at your lab station for the next class.
 - ☒ B. disposed of according to your instructor's directions.
 - C. dumped in the sink.
 - D. taken home.
7. If a lab experiment is not completed, you should
 - ☒ A. discuss the issue with your instructor.
 - B. sneak in after school and work alone.
 - C. come in during lunch and finish while eating lunch.
 - D. make up some results.
8. You are heating a substance in a test tube. Always point the open end of the tube
 - A. toward yourself.
 - B. toward your lab partner.
 - C. toward another classmate.
 - ☒ D. away from all people.
9. You are heating a piece of glass and now want to pick it up. You should
 - A. use a rag or paper towels.
 - B. pick up the end that looks cooler.
 - ☒ C. use tongs.
 - D. pour cold water on it.
10. You have been injured in the laboratory (cut, burn, etc.). First you should
 - A. visit the school nurse after class.
 - B. see a doctor after school.
 - ☒ C. tell the science instructor at once.
 - D. apply first aid yourself.
11. When gathering glassware and equipment for an experiment, you should
 - A. read all directions carefully to know what equipment is necessary.
 - B. examine all glassware to check for chips or cracks.
 - C. clean any glassware that appears dirty.
 - ☒ D. All of the above.
12. You want to place a piece of glass tubing into a rubber stopper after the tubing has been fire polished and cooled. This is best done by
 - A. lubricating the tubing with water or glycerin.
 - B. using a towel or cotton gloves for protection.
 - C. twisting the tubing and stopper carefully.
 - ☒ D. all of the above.
13. Personal eyeglasses provide as much protection as
 - A. a face shield.
 - B. safety glasses.
 - C. splashproof chemical goggles.
 - ☒ D. none of the above.
14. Long hair in the laboratory must be
 - A. cut short.
 - B. held away from the experiment with one hand.
 - C. always neatly groomed.
 - ☒ D. tied back or kept entirely out of the way with a hair band, hairpins, or other confining device.
15. In a laboratory, the following should not be worn.
 - A. loose clothing.
 - B. dangling jewelry.
 - C. sandals.
 - ☒ D. all of the above.
16. The following footwear is *best* in the laboratory.
 - A. sandals
 - B. open-toed shoes
 - ☒ C. closed-toed shoes
 - D. shoes appropriate for the weather

17. Horseplay or practical jokes in the laboratory are
Ⓐ always against the rules.
B. okay.
C. not dangerous.
D. okay if you are working alone.
18. If a piece of equipment is not working properly, stop, turn it off, and tell
A. the custodian.
B. your lab partner.
C. your best friend in the class.
Ⓓ the science instructor.
19. If an acid is splashed on your skin, wash at once with
A. soap.
B. oil.
C. weak base.
Ⓓ plenty of water.
20. When you finish working with chemicals, biological specimens, and other lab substances, always
A. treat your hands with skin lotion.
Ⓑ wash your hands thoroughly with soap and water.
C. wipe your hands on a towel.
D. wipe your hands on your clothes.
21. Draw a diagram of your science room and label the locations of the following:
☐ Fire Blanket
☐ Fire Extinguisher(s)
☐ Exits
☐ Eyewash Station
☐ Emergency Shower
☐ Closest Fire Alarm Station
☐ Waste Disposal Container(s)

True—False

- | T | F | T | F |
|---|---|---|---|
| 22. <input checked="" type="checkbox"/> | <input type="checkbox"/> Hot glass looks the same as cold glass. | 29. <input type="checkbox"/> | <input checked="" type="checkbox"/> Chipped or cracked glassware is okay to use. |
| 23. <input checked="" type="checkbox"/> | <input type="checkbox"/> All chemicals in the lab are to be considered dangerous. | 30. <input checked="" type="checkbox"/> | <input type="checkbox"/> Read all procedures thoroughly before entering the laboratory. |
| 24. <input type="checkbox"/> | <input checked="" type="checkbox"/> Return all unused chemicals to their original containers. | 31. <input checked="" type="checkbox"/> | <input type="checkbox"/> All unauthorized experiments are prohibited. |
| 25. <input checked="" type="checkbox"/> | <input type="checkbox"/> Work areas should be kept clean and tidy. | 32. <input type="checkbox"/> | <input checked="" type="checkbox"/> You are allowed to enter the chemical preparation/storage area any time you need to get an item. |
| 26. <input type="checkbox"/> | <input checked="" type="checkbox"/> Pipets are used to measure and dispense small amounts of liquids. You should draw the liquid into the pipet using your mouth. | 33. <input checked="" type="checkbox"/> | <input type="checkbox"/> Laboratory aprons should be worn during all lab activities. |
| 27. <input type="checkbox"/> | <input checked="" type="checkbox"/> Laboratory work can be started immediately upon entering the laboratory even if the instructor is not yet present. | 34. <input type="checkbox"/> | <input checked="" type="checkbox"/> It's okay to pick up broken glass with your bare hands as long as the glass is placed in the trash. |
| 28. <input checked="" type="checkbox"/> | <input type="checkbox"/> Never remove chemicals or other equipment from the laboratory. | 35. <input checked="" type="checkbox"/> | <input type="checkbox"/> Never leave a lit burner unattended. |

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Flinn Scientific's Student Safety Contract

PURPOSE

Science is a hands-on laboratory class. You will be doing many laboratory activities which require the use of hazardous chemicals. Safety in the science classroom is the #1 priority for students, teachers, and parents. To ensure a safe science classroom, a list of rules has been developed and provided to you in this student safety contract. These rules must be followed at all times. Two copies of the contract are provided. One copy must be signed by both you and a parent or guardian before you can participate in the laboratory. The second copy is to be kept in your science notebook as a constant reminder of the safety rules.

GENERAL RULES

1. Conduct yourself in a responsible manner at all times in the laboratory.
2. Follow all written and verbal instructions carefully. If you do not understand a direction or part of a procedure, ask the instructor before proceeding.
3. Never work alone. No student may work in the laboratory without an instructor present.
4. When first entering a science room, do not touch any equipment, chemicals, or other materials in the laboratory area until you are instructed to do so.
5. Do not eat food, drink beverages, or chew gum in the laboratory. Do not use laboratory glassware as containers for food or beverages.
6. Perform only those experiments authorized by the instructor. Never do anything in the laboratory that is not called for in the laboratory procedures or by your instructor. Carefully follow all instructions, both written and oral. Unauthorized experiments are prohibited.
7. Be prepared for your work in the laboratory. Read all procedures thoroughly before entering the laboratory.
8. Never fool around in the laboratory. Horseplay, practical jokes, and pranks are dangerous and prohibited.
9. Observe good housekeeping practices. Work areas should be kept clean and tidy at all times. Bring only your laboratory instructions, worksheets, and/or reports to the work area. Other materials (books, purses, backpacks, etc.) should be stored in the classroom area.
10. Keep aisles clear. Push your chair under the desk when not in use.
11. Know the locations and operating procedures of all safety equipment including the first aid kit, eyewash station, safety shower, fire extinguisher, and fire blanket. Know where the fire alarm and the exits are located.
12. Always work in a well-ventilated area. Use the fume hood when working with volatile substances or poisonous vapors. Never place your head into the fume hood.
13. Be alert and proceed with caution at all times in the laboratory. Notify the instructor immediately of any unsafe conditions you observe.
14. Dispose of all chemical waste properly. Never mix chemicals in sink drains. Sinks are to be used only for water and those solutions designated by the instructor. Solid chemicals, metals, matches, filter paper, and all other insoluble materials are to be disposed of in the proper waste containers, not in the sink. Check the label of all waste containers twice before adding your chemical waste to the container.
15. Labels and equipment instructions must be read carefully before use. Set up and use the prescribed apparatus as directed in the laboratory instructions or by your instructor.
16. Keep hands away from face, eyes, mouth and body while using chemicals or preserved specimens. Wash your hands with soap and water after performing all experiments. Clean all work surfaces and apparatus at the end of the experiment. Return all equipment clean and in working order to the proper storage area.
17. Experiments must be personally monitored at all times. You will be assigned a laboratory station at which to work. Do not wander around the room, distract other students, or interfere with the laboratory experiments of others.
18. Students are never permitted in the science storage rooms or preparation areas unless given specific permission by their instructor.
19. Know what to do if there is a fire drill during a laboratory period; containers must be closed, gas valves turned off, fume hoods turned off, and any electrical equipment turned off.
20. Handle all living organisms used in a laboratory activity in a humane manner. Preserved biological materials are to be treated with respect and disposed of properly.

21. When using knives and other sharp instruments, always carry with tips and points pointing down and away. Always cut away from your body. Never try to catch falling sharp instruments. Grasp sharp instruments only by the handles.
22. If you have a medical condition (e.g., allergies, pregnancy, etc.), check with your physician prior to working in lab.

CLOTHING

23. Any time chemicals, heat, or glassware are used, students will wear laboratory goggles. There will be no exceptions to this rule!
24. Contact lenses should not be worn in the laboratory unless you have permission from your instructor.
25. Dress properly during a laboratory activity. Long hair, dangling jewelry, and loose or baggy clothing are a hazard in the laboratory. Long hair must be tied back and dangling jewelry and loose or baggy clothing must be secured. Shoes must completely cover the foot. No sandals allowed.
26. Lab aprons have been provided for your use and should be worn during laboratory activities.

ACCIDENTS AND INJURIES

27. Report any accident (spill, breakage, etc.) or injury (cut, burn, etc.) to the instructor immediately, no matter how trivial it may appear.
28. If you or your lab partner are hurt, immediately yell out "Code one, Code one" to get the instructor's attention.
29. If a chemical splashes in your eye(s) or on your skin, immediately flush with running water from the eyewash station or safety shower for at least 20 minutes. Notify the instructor immediately.
30. When mercury thermometers are broken, mercury must not be touched. Notify the instructor immediately.

HANDLING CHEMICALS

31. All chemicals in the laboratory are to be considered dangerous. Do not touch, taste, or smell any chemicals unless specifically instructed to do so. The proper technique for smelling chemical fumes will be demonstrated to you.
32. Check the label on chemical bottles twice before removing any of the contents. Take only as much chemical as you need.
33. Never return unused chemicals to their original containers.

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Flinn Scientific's Student Safety Contract

34. Never use mouth suction to fill a pipet. Use a rubber bulb or pipet pump.
35. When transferring reagents from one container to another, hold the containers away from your body.
36. Acids must be handled with extreme care. You will be shown the proper method for diluting strong acids. Always add acid to water, swirl or stir the solution and be careful of the heat produced, particularly with sulfuric acid.
37. Handle flammable hazardous liquids over a pan to contain spills. Never dispense flammable liquids anywhere near an open flame or source of heat.
38. Never remove chemicals or other materials from the laboratory area.
39. Take great care when transporting acids and other chemicals from one part of the laboratory to another. Hold them securely and walk carefully.

HANDLING GLASSWARE AND EQUIPMENT

40. Carry glass tubing, especially long pieces, in a vertical position to minimize the likelihood of breakage and injury.
41. Never handle broken glass with your bare hands. Use a brush and dustpan to clean up broken glass. Place broken or waste glassware in the designated glass disposal container.
42. Inserting and removing glass tubing from rubber stoppers can be dangerous. Always lubricate glassware (tubing, thistle tubes, thermometers, etc.) before attempting to insert it in a stopper. Always protect your hands with towels or cotton gloves when inserting glass tubing into, or removing it from, a rubber stopper. If a piece of glassware becomes "frozen" in a stopper, take it to your instructor for removal.
43. Fill wash bottles only with distilled water and use only as intended, e.g., rinsing glassware and equipment, or adding water to a container.
44. When removing an electrical plug from its socket, grasp the plug, not the electrical cord. Hands must be completely dry before touching an electrical switch, plug, or outlet.
45. Examine glassware before each use. Never use chipped or cracked glassware. Never use dirty glassware.
46. Report damaged electrical equipment immediately. Look for things such as frayed cords, exposed wires, and loose connections. Do not use damaged electrical equipment.
47. If you do not understand how to use a piece of equipment, ask the instructor for help.
48. Do not immerse hot glassware in cold water; it may shatter.

HEATING SUBSTANCES

49. Exercise extreme caution when using a gas burner. Take care that hair, clothing and hands are a safe distance from the flame at all times. Do not put any substance into the flame unless specifically instructed to do so. Never reach over an exposed flame. Light gas (or alcohol) burners only as instructed by the teacher.
50. Never leave a lit burner unattended. Never leave anything that is being heated or is visibly reacting unattended. Always turn the burner or hot plate off when not in use.
51. You will be instructed in the proper method of heating and boiling liquids in test tubes. Do not point the open end of a test tube being heated at yourself or anyone else.
52. Heated metals and glass remain very hot for a long time. They should be set aside to cool and picked up with caution. Use tongs or heat-protective gloves if necessary.
53. Never look into a container that is being heated.
54. Do not place hot apparatus directly on the laboratory desk. Always use an insulating pad. Allow plenty of time for hot apparatus to cool before touching it.
55. When bending glass, allow time for the glass to cool before further handling. Hot and cold glass have the same visual appearance. Determine if an object is hot by bringing the back of your hand close to it prior to grasping it.

QUESTIONS

56. Do you wear contact lenses?
☐ YES ☐ NO
57. Are you color blind?
☐ YES ☐ NO
58. Do you have allergies?
☐ YES ☐ NO
If so, list specific allergies _____

AGREEMENT

I, _____, (student's name) have read and agree to follow all of the safety rules set forth in this contract. I realize that I must obey these rules to ensure my own safety, and that of my fellow students and instructors. I will cooperate to the fullest extent with my instructor and fellow students to maintain a safe lab environment. I will also closely follow the oral and written instructions provided by the instructor. I am aware that any violation of this safety contract that results in unsafe conduct in the laboratory or misbehavior on my part, may result in being removed from the laboratory, detention, receiving a failing grade, and/or dismissal from the course.

Student Signature

Date

Dear Parent or Guardian:

We feel that you should be informed regarding the school's effort to create and maintain a safe science classroom/laboratory environment.

With the cooperation of the instructors, parents, and students, a safety instruction program can eliminate, prevent, and correct possible hazards.

You should be aware of the safety instructions your son/daughter will receive before engaging in any laboratory work. Please read the list of safety rules above. No student will be permitted to perform laboratory activities unless this contract is signed by both the student and parent/guardian and is on file with the teacher.

Your signature on this contract indicates that you have read this Student Safety Contract, are aware of the measures taken to ensure the safety of your son/daughter in the science laboratory, and will instruct your son/daughter to uphold his/her agreement to follow these rules and procedures in the laboratory.

Parent/Guardian Signature

Date

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